

# CLEARING MUDDY PONDS

BIOLOGY JOB SHEET TX-13

APRIL 1995

Muddy ponds are not only unsightly, but less productive than ponds with good water color. Largemouth bass perform poorly in muddy ponds because bass depend on sight to locate and capture prey. Catfish, tactile (touch) feeders, can perform well in muddy ponds when fed a supplemental ration.

The first step in solving a muddy pond problem is to identify the problem. Many ponds become muddy following a heavy rain and will clear in a few days. The drainage area should be inspected for eroding areas of little or no vegetation. Over time these areas will contribute sediments that will reduce the storage capacity of the pond. Sod-forming grasses should be established and maintained on these areas.

Other ponds stay muddy most of the time. Many of these ponds can be cleared by (1) establishing shoreline vegetation that will reduce erosive wave action, (2) reducing livestock wading, (3) removing sediment deposits or (4) removing bottom-dwelling fish species, such as bullhead catfish or common carp.

Some ponds remain constantly muddy because of negatively charged clay particles that constantly repel each other and will not settle out. These constantly dispersed and suspended clay particles are called colloidal clays. Soils in East Texas that exhibit this characteristic include the Arol, Axtell, Burlewash, Crockett, Edna, Elmina, Falba, Lufkin, Sorter, Tabor, Waller, and Zack series.

Colloidal clay particles can be precipitated by introducing particles of positive charge to the pond to bind with clay particles which will cause clumping and settling out. The oldest method of removing colloidal clay turbidity is application of organic matter. Hay, barnyard, manure and cottonseed meal with superphosphate have all been used successfully, but with all these treatments, results can be unpredictable and risky during summer because of possible oxygen depletion. These treatments should be done in early spring or late fall. Approximate rates are as follows:

1. 75 lbs. of cottonseed meal and 25 lbs. of superphosphate per surface acre - apply at 2 week intervals until pond clears. Do not apply during mid and late summer to avoid fish dieoff from oxygen depletion. Distribute evenly over pond surface.

2. **Ten small, square bales of hay per acre** - The bales must be broken open and the hay scattered over the shallow edges of the pond. Repeat in 10 days if necessary. Again, do not treat in mid to late summer.

Several different chemicals have shown more favorable results than organic matter. These chemicals include hydrated lime, or builders lime, (calcium hydroxide); filter alum (aluminum sulfate); gypsum (calcium sulfate); and agricultural lime (calcium carbonate).

Care must be taken before selecting the chemical to use. These chemicals may alter water chemistry drastically and kill fish in the pond. This is of particular concern in East Texas where pond waters are normally soft (low alkalinity). Alum should be applied carefully and cautiously in soft waters.

Cost of chemicals and quantity of chemicals required are other major considerations. Alum is much more expensive (\$25 per 50 pounds) than the other 3 chemicals (\$5 per 50 pounds), but it normally takes much less alum to clear muddy ponds. In spite of its cost and potential effect on fish, alum is often used because less is required.

Agricultural lime should be tried initially in soft waters to raise alkalinity and protect fish from adverse effects of alum. This alone may clear a pond. Two to three tons per surface acre (\$25 per ton when purchased in bulk) may be required. If it doesn't clear, the agricultural lime will still elevate alkalinity so alum can be used safely. If the pond clears, an annual fertilization program will help keep colloidal clays settled.

If agricultural lime fails to clear the pond, alum, gypsum, or hydrated lime may be tried. Local offices of the Natural Resources Conservation Service (formerly Soil Conservation Service) and Texas Agricultural Extension Service can assist in determining the water's alkalinity, the best choice of chemical and how much to apply.

Whether alum, gypsum and hydrated lime are chosen, each should be applied uniformly across the pond surface with as little wind and surface disturbance as possible. This will allow the chemicals to attach and carry the soil particles down as they sink.

Chemicals will be applied in pounds per acre-foot. If alum were chosen, and the pond were slightly muddy, the rate might be 50 pounds per acre-foot. If gypsum were selected and the pond were excessively muddy, the rate might be 1000 pounds per acre.

Regardless of which chemical or technique is used, the risk is high that the pond may become muddy again. Wading and watering livestock, extremely windy conditions or flushing and agitating rains can stir the colloidal clays. Because treatments are expensive, and often have to be repeated, stocking catfish, either channel or blue, and feeding a supplemental ration might be a better alternative.